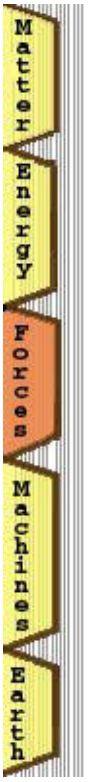
Newton's Laws



LAW # 2: F=MA

If a bowling ball and a soccer ball were both dropped at the same time from the roof of a tall building, which would hit the ground with a greater force? Common sense tells us that the bowling ball would. We know that gravity accelerates all objects at the same rate, so both balls would hit the ground at the same time. Therefore the difference in forces would be caused by the different masses of the balls. Newton stated this relationship in his second law, **the force of an object is equal to its mass times its acceleration**. A karate master can exert a tremendous force by utilizing years of training, proper technique and focus. Although a human hand and forearm may have a mass of .75 kg, with proper technique, a karate sensei (master) will be able to use his entire body's mass in breaking bricks. Combining a possible mass of 70 kg and a acceleration of 50 m/s2, this master will exert 3500 N of force, well more force needed to break several bricks. Identify other occurances where Newton's 2nd Law may apply.

$$F = M \times A$$

A speeding bullet and a slow moving train both have tremendous force. The force of the bullet can be attributed to its incredible acceleration while the force of the train comes from its great mass.

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